Section 11 Sevier River Basin
DRINKING WATER

Drinking Water

Public water purveyors need to apply diligent management to consistently supply high-quality drinking water to water users.

11.1 INTRODUCTION

This section discusses public and private culinary water supplies in the Sevier River Basin. It reviews the systems and their present conditions. The problems are discussed and alternative solutions are presented.

11.2 SETTING

Even though water systems provide many categories of uses, the primary purpose is to supply drinking water to the people. Although the earliest settlers located near streams, they were quick to pipe spring water to the community or dig wells to assure a high quality, readily available supply. More distant communities utilized wells or piped water long distances from springs near the mountains.

Population is the main factor controlling culinary water demand. It is expected future demand will be met from groundwater supplies. Culinary water use in homes is fairly consistent throughout the year but use for lawn and garden irrigation adds substantially to the demand during spring and summer.

State of Utah Administrative Rules for Public Drinking Water Systems, R309-200 thru R309-211, define a public water system (PWS) as one with at least 15 connections or serves an average of at least 25 people at least 60 days per year. PWSs are further categorized into community water systems (CWSs) or non-community water systems (NCWSs). A CWS serves at least 15 connections used by year-round residents or regularly serves at least 25 year-round residents.

Non-community water systems are categorized as either non-transient non-community water systems (NTNCWSs) or transient non-community water systems (TNCWs). NTNCWSs regularly serve at least 25 of the same nonresident persons per day for more than six months per year. Examples include water systems that serve churches, schools, and work places. TNCWSs regularly serve at least 25 different nonresident persons per day for more than six months per year, and do not serve 25 of the same nonresidents per day. Examples include campgrounds, restaurants and retail stores with fewer than 25 permanent nonresident staff. Private water systems include self-supplied industrial facilities and domestic wells or springs. Examples include isolated individual homes or industries located outside CWS service areas.

The State of Utah Division of Drinking Water (DDW) designates each CWS, NTNCWS and TNCWS as “approved” or “unapproved” on the basis of compliance with various federal regulations and state rules for drinking water systems. Drinking water systems seldom remain on the unapproved list very long. The Kanosh-Paiute Indian Reservation in Millard County and the Shadow Mountain Estates in Sevier County are not presently rated.

Presently, surface water supplies are regulated to a much greater degree than groundwater or spring water supplies. All surface water supplies require minimum treatment in the form of disinfection against waterborne, disease-causing organisms and viruses. Additionally, filtration is frequently mandated as a secondary barrier against their occurrence in water distribution systems. All of the public water systems in the Sevier River Basin obtain their water from springs and/or wells. There are no surface water sources at present.

CWSs serve both municipal and industrial (M&I) users. While not all industrial users require culinary quality water, the bulk of industrially delivered water is of culinary quality

because of the convenience of using the local community water production and delivery systems.

11.3 ORGANIZATIONS, REGULATIONS AND RULES

All public drinking water supplies are subject to the Utah Safe Drinking Water Act and the Utah Public Drinking Water Regulations. In addition, all public drinking water supplies are subject to federal regulations promulgated under the authority of the federal Safe Drinking Water Act (SDWA) of 1974, the SDWA Amendments of 1986, and the 1996 Reauthorized Safe Drinking Water Act.

11.3.1 Local

Towns, cities and counties each have primary responsibility for drinking water quality control within their respective jurisdictions. There are 57 public drinking water systems in the basin.

Drinking water quality is important

11.3.2 State

The Utah Safe Drinking Water Act (USDWA) of 1974 and Amendments of 1986 and 1996 created the Drinking Water Board and empowered it to adopt, as necessary, Administrative Rules for Public Drinking Water Systems. The Division of Drinking Water administers and enforces the federal regulations and state rules. In addition, the Division of Water Rights and local boards of health regulate certain issues that pertain to drinking water well construction.

The USDWA authorizes rule promulgation by the board designed to; 1) Establish standards for drinking water quality, 2) establish standards for the design and construction of new and expanded water treatment and conveyance facilities, 3) protect watersheds and other sources of raw public water supplies, 4) provide technical and financial assistance to train operators, construct new treatment and distribution facilities, and renovate existing ones, 5) administer federal programs providing technical and financial assistance to local water agencies, 6) carry out emergency plans when natural disasters contaminate public drinking water supplies, and 7) provide enforcement of both state and federal drinking water regulations.

State rules are equal to or more stringent than federal regulations. More stringent state rules have resulted when the Board and Division of Drinking Water have made a determination after public hearings that federal regulations do not adequately protect some aspect of drinking water quality.

Maximum contaminant levels (MCLs) have been established by the Division of Drinking Water setting treatment thresholds. MCLs have been established for primary and secondary water quality parameters and treatment process objectives. Primary standards apply to water quality parameters that affect public health and safety while secondary standards apply to maintenance of aesthetic water quality parameters such as taste, odor and turbidity.

The Division of Drinking Water also administers construction funding. These funds are used to construct new water system infrastructure as well as repair existing treatment and distribution facilities. Construction funds are allocated in four ways -- interest loans, credit enhancements, direct grants, and interest buy-downs.

Through the federal 1996 Reauthorized Safe Drinking Water Act, the Drinking Water Board presently receives funds to establish a drinking water State Revolving Fund (SRF). The purpose of this fund is to ensure all drinking water systems within the state are capable of

Table 1 l-l
STATE REVOLVING FUND PROJECTIONS

Year	Federal	State (millions)	Total
1998	9.76	$1.95	$11.71
1999	6.0	1.2	7.2
2000	6.5	1.3	7.8
200 l-2003	6.0-6.5/vear	1.2-l .3/vear	7.2-7.8/vear

maintaining and protecting the supply of public drinking water at an affordable cost. Funding projections through the next several years for Drinking Water Board projects are shown in Table 1 l-l.

The Drinking Water Board has committed funds greatly in excess of the federally required minimum 20- percent match. These state funds come from both repayments and cash reserves associated with the SRF and general tax revenues.

The scope and nature of extreme emergencies endangering the public health must be reported to the Division of Drinking Water. If the report shows significant decline in the public water supply quality, the division takes immediate action to rectify the hazard. Water system operating policies may then be revised to prevent similar problems in the future.

The 1986 federal Safe Drinking Water Act (SDWA) amendments require all states to develop wellhead protection programs. As a result, the Division of Drinking Water has created the Drinking Water Source Protection Rule (DWSPR) outlining the general requirements to protect wellheads from outside surface contamination. Procedures are outlined in the State's Administrative Rules for Public Drinking Water Systems R309-200 through R309-211. Requirements of the DWSPR include preparation of a Drinking Water Source Protection Plan for each groundwater source in all public water systems. The system operators have primary responsibility for preparation of these plans. An exception may be granted when the operator of a public water system cannot afford the cost of preparing the plan. DWSPR also requires proof of ownership and maintenance of all land in and around wellheads where recontamination from surface water sources can occur. Monitoring programs established by state rules and federal regulations are used to determine if public water systems are meeting standards.

The Rules for Public Drinking Water Systems, R309-102-9 requires all public water systems; 1) Serving more than 800 individuals, 2) employing treatment processes in surface water production facilities, or 3) distributing well or spring water that may be under the influence of surface water; to have an operator certified in accordance with the standards of R309-201. The Division of Drinking Water recently received authorization to amend the rules to extend the operator certification requirement to all CWSs, NCNTWSs and NCTWSs. The rule modifications will likely appear in 1999.

R309-104 of the Rules for Public Drinking Water Systems set allowable contaminant levels and address state requirements for public water system operators to monitor existing drinking water quality by testing and analyzing water samples. The rules also outline the documentation requirements of water quality analysis by others for submission to the Division of Drinking Water.

11.3.3 Federal

The federal Safe Drinking Water Act (SDWA) of 1974 authorized the Environmental

Protection Agency (EPA) promulgation of natural drinking water regulations to protect the public from waterborne diseases. The SDWA was expanded and strengthened via the SDWA Amendments of 1986. This increased the responsibility of the EPA to; 1) Establish maximum levels of contamination for established pollutants, 2) set deadlines for owners/operators of treatment facilities to comply with federal regulations, 3) regulate sources for lead and copper protection, and 4) strengthen enforcement of all regulations in the act.

The SDWA requires EPA to regulate chemical, radiological, physical and bacteriological substances in drinking water posing a health risk to the public. The EPA has established maximum contaminant levels (MCLs) for an extensive list of organic and inorganic contaminants. In addition, the SDWA established a strict schedule for EPA to set MCLs for additional contaminants. These are regularly identified and subjected to additional regulations.

The reauthorization of the 1996 Safe Drinking Water Act added some additional requirements. These amendments created several new programs and included authorization of $12 billion nationwide in federal funds for various drinking water programs and activities from '1997 through 2003.

New capacity development provisions were also part of the Reauthorized SDWA. The EPA was required to complete a review of existing state capacity development efforts and publish information to assist the states and public water suppliers with these efforts by February 6, 1997.

The EPA was to have published regulations by August 6, 1998 requiring community water systems to prepare and distribute consumer confidence reports at least once a year. However, the state governors were empowered to waive the direct mailing requirement for these reports for community water systems of fewer than 10,000 people.

Under present law, EPA must publish a maximum contaminant level goal (MCLG) and promulgate a National Primary Drinking Water Regulation (NPDWR) for contaminants where; 1) There may be an adverse effect on human health, 2) contaminants are known, or are likely, to occur in public water systems at a frequency and concentration of significance to public health, and 3) regulation offers a meaningful opportunity to reduce health risk for people served by public water systems.

EPA is also legislatively directed to issue regulations establishing criteria for a monitoring program for unregulated contaminants. The regulations will not require sampling by all systems but by only a representative group serving 10,000 or fewer people. By August 6, 1999, and every five years thereafter, EPA must issue a list of no more than 30 unregulated contaminants to be monitored and included in the occurrence data base by public water systems. The Reauthorized SDWA also allows EPA to provide grants to states for the development and implementation of state programs to ensure the coordinated and comprehensive protection of groundwater resources.

11.4 DRINKING WATER PROBLEMS

Demand for high quality water supplies and the potential for contamination has increased in areas of population growth. Much of the water for culinary use comes from springs, the balance from wells.

11.4.1 Deterioration of Facilities and Supplies

When the basin was first settled, communities developed culinary water supply systems. Many of these early systems have been replaced or upgraded to provide an adequate culinary water supply. Within the next few years, parts or all of other community drinking water facilities need to be upgraded or replaced to ensure water supplies are sufficient and in compliance with increasingly stringent water quality standards.

Natural geologic conditions, along with human activities such as mining, hazardous waste spills, agriculture and construction, all contribute to drinking water quality deterioration. Contamination also comes from upper watershed activities such as improper timber harvesting, over-grazing by wildlife and livestock, and recreation. These activities tend to reduce

vegetation and expose the soil to erosion and sediment production. This can reduce the water infiltration process, which is the source of groundwater supply to springs. In some areas such as along the western slopes of the Wasatch Plateau and on the Markagunt Plateau, summer home wastewater systems such as septic tanks can contribute to the pollution of both springs and down slope domestic water wells unless proper waste disposal practices are in place.

In addition, there is a need for affordable water quality testing methods for domestic well owners, preferably home testing kits. Domestic well users may need affordable home treatment units for remediation of contamination by nitrates, pesticides, or volatile organics.

11.4.2 Spring and Wellhead Area Protection

Currently, public water suppliers are required to own or control protection zones around their supply sources. However, many of the culinary water sources were established prior to the state's protection requirements. As a result, many springs and wells used for culinary water supplies do not meet the current rules for protection from sources of pollution. However, if contamination occurs, state rules mandate protection of the source from further pollution.

Current regulations require source protection plans for public community water systems wells by the end of 1998 and for springs by 1999. These rules apply to community systems serving less than 3,300 people. The Division of Drinking Water has funding available of $2,500 for each source protection plan.

There are 57 public community water systems in the basin. Only 22 of these have submitted water source protection plans for one or more of their sources. Plans were submitted for 72 water sources. The status of the plans submitted is as follows: Concur, 9; concur/recommendations, 2; disapproved, 24; incomplete, 6; and no status, 3 1. Figure 1 l-1 shows the location of the public community water systems.

There were 10 systems not classed as public that submitted water source protection plans for 18 sources. The status of the plans submitted is: Concur, 3; concur/recommendations, 4; disapproved, 2; incomplete, 4; and no status, 5.

11.4.3 Culinary Water Shortages

Public water suppliers will need additional sources of culinary water to meet the increasing demands. In some locations, existing springs can be developed to produce more water or additional springs can be diverted into the existing systems. This would all require a water right.

In many locales, however, new wells will need to be constructed to meet the increased demands. This will require an existing groundwater right or purchase and change in place and nature of an existing surface water right. However, the ability to acquire water rights is becoming more difficult.

11.5 CULINARY WATER USE AND PROJECTED DEMANDS

The average water use in the Sevier River Basin in 1996 was 267 gallons of culinary water per capita per day (gpcd). About 133 gpcd or 50 percent of the culinary water was used indoors. The statewide average is about 268 gpcd. Average use during 1996 varied from 190 gpcd in Sanpete County to 357 gpcd in Millard County and 415 gpcd in Juab County. The culinary water demand for each community is shown in Table 1 l-2. The current use (1996)and projected demand for each county through the year 2020 are shown in Table 9-2. The variability between communities can be attributed to the amounts of culinary water used for outside lawn and garden irrigation and the amounts lost to system leaks and other deficiencies. Some water systems also have large users such as dairies or feed lots that skew the average usage data for the general population.

There are hundreds of homes built in mountain areas such as the Markagunt Plateau, Monroe Mountain and the Wasatch Plateau. The demand for domestic water supplies in these areas has been, and will continue to increase. Water production from private domestic wells has been increasingly popular. Since the basin

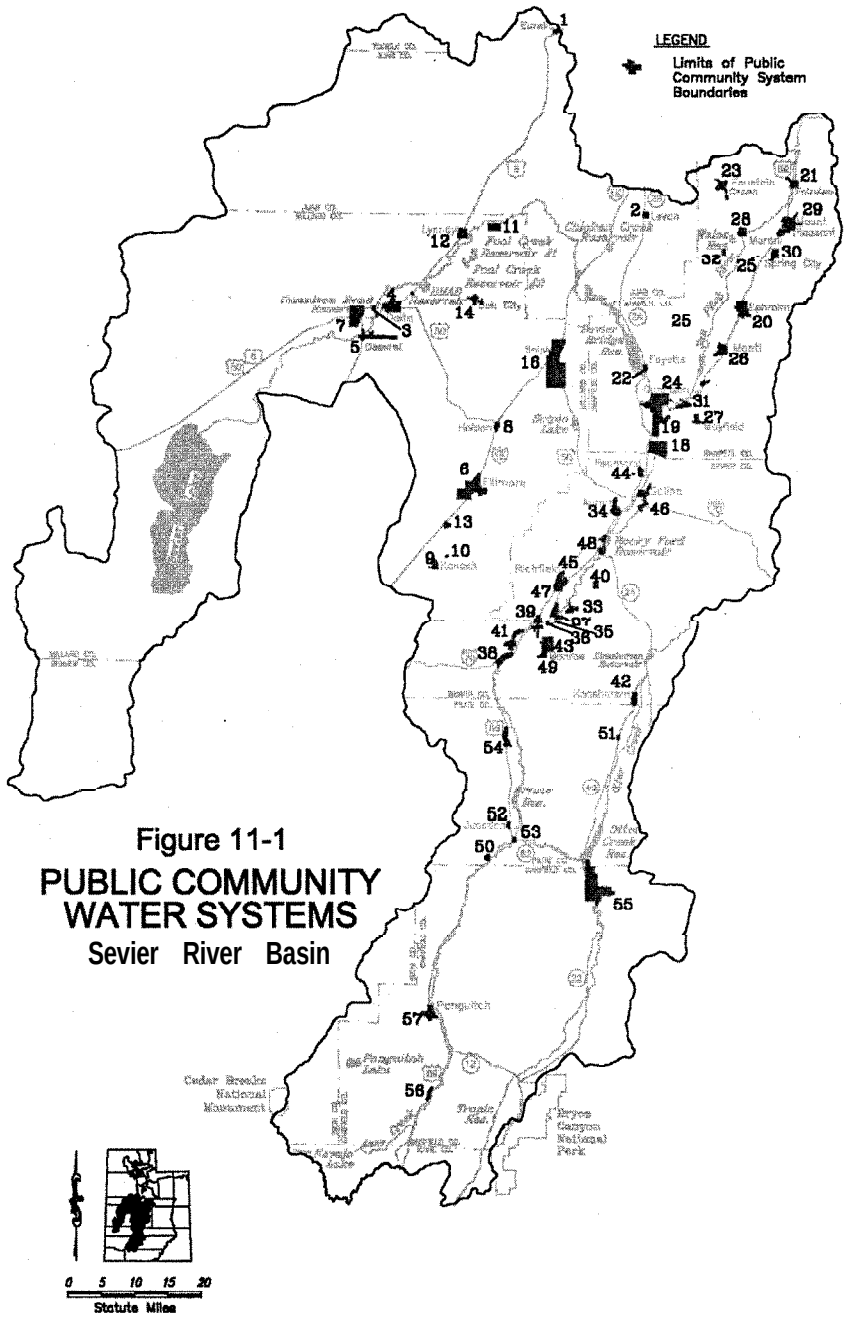


Figure 11-1

PUBLIC COMMUNITY WATER SYSTEMS

Sevier River Basin

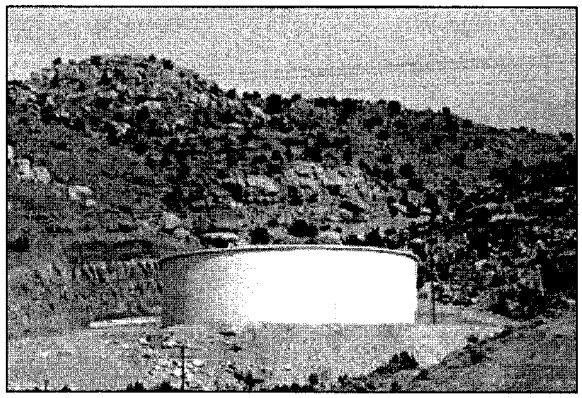
is closed to development of new domestic wells, sources to meet the future demand will have to come from existing rights.

Estimates of culinary water use by 2020 were based on population projections. The culinary water diversions were projected to increase from 14,320 acre-feet in 1996 to 21,850 acre-feet by 2020. Depletions increased from 7,160 acre-feet in 1996 to 10,930 acre-feet by 2020. This is an increase of 53 percent in 24 years.

11.6 ALTERNATIVE SOLUTIONS

The location and type of development occurring will dictate how culinary water is provided for expanding populations. The needed water will come from springs and wells. Construction of water treatment plants as a precondition to the use of surface water supplies is possible but this source is unlikely because of cost. The increased use of private domestic wells for single residences is possible under the present moratorium with the purchase of existing water rights. This will likely result in conversion of a small quantity of agricultural water rights to culinary water purposes.

There is another possibility for providing a water supply for domestic wells. This would be establishment of a water bank where water could be stored in upstream reservoirs to replace groundwater used for domestic purposes. This stored water could come from water rights of owners who may have surplus water or who may have land to retire. A long-term lease would be required for any water put in such a water bank.



Richfield City water storage tank

Table 11-2
PUBLIC COMMUNITY SYSTEMS CULINARY WATER SUPPLY AND USE-1996

Water Supplier	Population Served	Total Connect	Reliable Source (ac-ft)	M&I Use (ac-ft)	Per Capita Use (gpcd)	System Capacity (ac-ft)
GARFIELD						
Antimony	215	120	287	62	257	124
Hatch	110	88	145	51	410	61
Panguitch	1,500	845	1,762	391	233	770
Garfield County Total	1,825	1,053	2,194	504	247	955
JUAB						
Eureka	640	315	155	68	95	78
Levan	564	257	1,048	491	777	491
Juab County Total	1,204	572	1,203	559	415	569
MILLARD						
Delta	2,998	1,022	1,768	1,177	350	1,177
Deseret-Oasis SS	491	138	679	135	246	295
Country Estates	72	18	30	8	100	15
Kanosh-Paiute Indian Res.	50	14	NA	13	223	NA
Lynndyl	150	67	1,161	49	290	498
Oak Meadows Subdivision	60	14	81	16	241	35
Sherwood Water Company	54	58	48	16	266	21
Fillmore	2,300	884	4,173	907	352	1,768
Hinckley	680	238	573	211	277	247
Holden	500	217	484	201	360	205
Kanosh	450	236	672	285	565	285
Leamington	250	85	181	89	318	89
Meadow	250	159	540	148	528	224
Oak City	650	236	1,395	331	455	583
Scipio	375	153	478	144	343	201
Millard County Total	9,330	3,539	12,263	3,730	357	5,643
PIUTE						
Circleville	500	261	766	236	421	236
Greenwich Waterworks Co	65	19	149	14	196	14
Junction	150	129	181	53	314	53
Kingston	145	67	193	33	201	33
Marysvale	310	220	223	115	332	115
Piute County Total	1,170	696	1,512	451	344	451
SANPETE						
Axtell	155	83	242	54	309	54
Centerfield War&Imp	800	342	724	445	496	445
Ephraim	3,300	961	3,627	820	222	1,593
Fairview	1,300	505	727	209	143	337

Table 11-2 Continued - -
PUBLIC COMMUNITY SYSTEMS CULINARY WATER SUPPLY AND USE-1996

Water Supplier	People Served	Total Connect	Reliable Source (ac-ft)	M&I Use (ac-ft)	Per Capita Use (gpcd)	System Capacity (ac-ft)
Fayette	195	63	177	89	408	89
Fountain Green	950	273	294	295	277	295
Gunnison	2,000	543	2,122	419	187	949
Heartland Mobile Home Pk	30	12	48	3	101	24
Manti	2,500	855	2,524	482	172	1,140
Maryfield	500	157	154	76	136	76
Moroni	2,000	416	1,089	203	90	557
Mt. Pleasant	2,333	1,060	1,840	432	165	836
Spring City	900	345	555	109	108	272
Sterling	350	116	234	53	135	110
Wales	200	90	130	31	139	61
Sanpete County Total	17,513	5,821	14,487	3,720	190	6,838
SEVIER						
Annabella	700	253	724	115	148	335
Aurora	993	315	453	170	152	208
Austin Come S.D.	142	45	89	36	223	39
Brooklyn Tapline Co.	160	50	NA	52	290	NA
Central Valley	741	136	360	114	137	168
Cove S.D.	130	42	257	75	516	107
Elsinore Town	750	303	683	530	631	530
Glenwood	437	155	181	122	249	122
Joseph	450	146	408	120	238	178
Koosharem	400	168	445	80	178	200
Monroe	1,606	688	1,289	628	349	628
Redmond	850	267	935	245	258	405
Richfield	6,800	2,247	2,419	2,077	273	2,077
Salina	2,200	924	905	793	322	793
Shadow Mnt. Estates Subdiv.	37	13	58	9	205	26
Sigurd	385	159	715	161	373	302
South Monroe	42	14	NA	31	650	NA
Sevier County Total	16,823	5,925	9,921	5,358	284	6,118
BASIN TOTAL	47,865	17,606	41,580	14,322	267	20,574

Source: Municipal and Industrial Water Use Inventory, Division of Water Resources.